

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

What is claimed:

1. (Previously Presented) A composition comprising a DNA repair modulator that specifically binds to the sequence KKKYIEIRKEAREAANGSDGPGSYM (SEQ. ID NO.:16), or a portion thereof, and inhibits non-homologous end joining.
2. (Original) The composition of claim 1, wherein the DNA repair modulator comprises a polypeptide.
3. (Previously Presented) The composition of claim 2, wherein the polypeptide comprises the sequence QVQLQESGAELVKPGASVLSCKAFDYTFITTYDINWIKQRPGQGLWIGWIY
PGSGNNKYNEKFKGKATLTADKSSRAAYMHLSLTSEDSA VYFCAGGPLNMTGFDY
GQGTTVTVSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRA
NRLVDGVPSRSGSGSQDYSLTISSELEYEDMGIYYCLQYDELPLTFGAGTKLEIKR
(SEQ. ID NO.:17).
4. (Previously Presented) The composition of claim 1, wherein said sequence is located on a DNA-PKcs and said DNA repair modulator inhibits less than 50% of DNA-PKcs enzymatic activity.
5. (Original) A single chain antibody that specifically binds to DNA-PKcs in a region outside of the catalytic domain, wherein the single chain antibody includes complementarity determining regions FTTYDIN (SEQ. ID NO.:18), WIYPGSGNNKYNEKFKG (SEQ. ID NO.:19), GPLNMTGFDY (SEQ. ID NO.:20), KASQDINSYLS (SEQ. ID NO.:21), RANRLVD (SEQ. ID NO.:22), and LQYDELPLT (SEQ. ID NO.:23), in an immunoglobulin framework.
6. (Currently Amended) A pharmaceutical composition comprising a DNA repair modulator, a prodrug thereof, or combination thereof, wherein the modulator inhibits DNA repair by specifically interacting with DNA-PKcs outside of the DNA-PKcs catalytic domain, said DNA repair modulator comprising a single chain antibody, said single chain antibody comprising the sequence QVQLQESGAELVKPGASVLSCKAFDYTFITTYDINWIKQRPGQGLWIGWIY

GSGNNYNEFKKGATLTADKSSRAAYMHLSLTSEDSAVYFCAGGPLNMTGFDYWQQ
GTTVTVSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANR
LVDGVPSRSGSGSQDYSLTISSELEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ.
ID NO.:17).

7. (Cancelled)

8. (Currently Amended) The **pharmaceutical** composition of claim 6, wherein the DNA repair modulator interacts with a region of DNA-PKcs having the sequence KKYIEIRKEAREAANGDSDGPSYM (SEQ. ID NO.:16), or a portion thereof.

9. (Currently Amended) The **pharmaceutical** composition of claim 6, wherein the DNA repair modulator inhibits DNA end joining.

10. (Cancelled)

11. (Currently Amended) The **pharmaceutical** composition of claim 6, wherein the DNA repair comprises a repair of a double-strand break.

12. (Currently Amended) The **pharmaceutical** composition of claim 6, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.

13. (Currently Amended) A **pharmaceutical** composition comprising a DNA repair modulator, a prodrug thereof, or a combination thereof, wherein the modulator interacts with a DNA repair polypeptide and sterically inhibits the DNA repair polypeptide, said DNA repair modulator comprising a single chain antibody, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYFTTYDINWIKQRPGQGLWIGWIYPGSGNNY
NEKFKGKATLTADKSSRAAYMHLSLTSEDSAVYFCAGGPLNMTGFDYWQQGTTV
SSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANRLVDGVP
SRFSGSGSGSQDYSLTISSELEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).

14. (Cancelled)

15. (Currently Amended) The **pharmaceutical** composition of claim 13, wherein the DNA repair modulator interacts with a region of DNA-PKcs.

16. (Currently Amended) The pharmaceutical composition of claim 15, wherein the region of DNA-PKcs include the sequence KKYIEIRKEAREAANGDSDGPSYM (SEQ. ID. NO. 16) or a portion thereof.
17. (Currently Amended) The pharmaceutical composition of claim 13, wherein the DNA repair modulator inhibits DNA end joining.
18. (Cancelled)
19. (Currently Amended) The pharmaceutical composition of claim 13, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.
- 20-26 (Cancelled)
27. (Previously Presented) A single chain antibody comprising an organelle localization signal sequence, wherein the single chain antibody inhibits DNA repair by binding to a DNA repair polypeptide, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYTFETYDINWIKQRPGQGLWIGWIYPGSGNNY NEKFKGKATLTADKSSRAAYMHLSLTSEDSA VYFCAGGPLNMTGFDYWGQGTTVTV SSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANRLVDGVP SRFSGSGSGQDYSLTISSELEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).
28. (Original) The single chain antibody of claim 27, wherein the organelle localization signal is selected from the group consisting of a nuclear localization signal and a chloroplast localization signal.
29. (Original) The single chain antibody of claim 27, wherein the DNA repair polypeptide is DNA-PKcs.
30. (Original) The single chain antibody of claim 29, wherein the single chain antibody binds DNA-PKcs in a region outside the catalytic domain.
31. (Previously Presented) The single chain antibody of claim 30, wherein the region includes the sequence KKYIEIRKEAREAANGDSDGPSYM (SEQ. ID NO.:16) or a portion thereof.
32. (Previously Presented) A single chain antibody comprising a protein transduction domain wherein the single chain antibody inhibits DNA repair by binding to a DNA repair polypeptide

and comprises the sequence QVKLQESGAEVLVKPGASVJKLSCAKAFDYTFETYDINWIKQRPGQGLWIGWIY
 GSGNNYNEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWQG
 GTTVTVPSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQQKPGKSPKTLIYRANR
 LVDGVPSRSGSGSGQDYSLTISSELEYEDMGIYYCLQYDELPLTFGAGTKLEIKR (SEQ.
 ID NO.:17) or includes the complementarity determining regions FTTYDIN (SEQ ID NO.: 18),
 WIYPGSGNNKYNEKFKG (SEQ. ID NO.:19), GPLNMTGFDY (SEQ. ID NO.:20),
 KASQDINSYLS (SEQ. ID NO.:21), RANRLVD (SEQ. ID NO.:22), and LQYDELPLT (SEQ.
 ID NO.:23), in an immunoglobulin framework.

33. (Cancelled)

34. (Previously Presented) The single chain antibody of claim 32, wherein the DNA repair polypeptide comprises DNA-PKcs.

35. (Previously Presented) The single chain antibody of claim 34, wherein the single chain antibody binds to a region of the DNA-PKcs polypeptide outside the catalytic domain.

36. (Previously Presented) The single chain antibody of claim 35, wherein the single chain antibody binds to a region including the sequence KKYIEIRKEAREAANGSDGPSYM (SEQ. ID NO.:16) or a portion thereof.

37. (Currently Amended) A pharmaceutical composition comprising a single chain antibody that binds to a polypeptide comprising the sequence KKKYIEIRKEAREAANGDSDGPSYM (SEQ. ID NO.:16), or a portion thereof, and inhibits non-homologous end joining;

38. (Currently Amended) ~~The A pharmaceutical~~ composition of claim 37, wherein the single chain antibody comprises a protein transduction domain and an organelle localization signal.

39. (Currently Amended) The pharmaceutical composition of claim 38, wherein the organelle localization signal is selected from the group consisting of a nuclear localization signal and a chloroplast localization signal.

40-60 (Cancelled)